

Chapter 9

Relief Well Outlets

9-1. General Requirements

Relief wells should always be located where they are accessible by a drill rig for pump testing and cleaning and provided with outlets for this purpose. The outlets should be designed to minimize maintenance and to provide protection against contamination from backflooding, damage from floating debris, and vandalism. When wells are to discharge into a collector ditch or backwater which may contain organic matter, debris, and fine-grained sediment in suspension, or where high velocities may be expected while the wells are flowing, they should be installed off to the side and should discharge into the ditch or area through a tee connection and horizontal outlet pipe protected against corrosion. A flat-type check valve should be installed on the well riser with a flap gate on the end of the horizontal pipe. An example of this type of installation is shown in Figure 9-1.

9-2. Check Valves

Control of backflooding, which greatly impairs well efficiency, is best implemented by flat-type check valves constructed of aluminum (see Figure 9-1). The check valve is supported by a soft rubber gasket which fits snugly over the top of the riser or cast iron tenon set in the concrete backfill. Other types of check valves may be used but should be thoroughly tested under controlled conditions before application in the field.

9-3. Outlet Protection

For wells discharging at ground surface, the tops of the wells should be provided with a metal screen to safeguard against vandalism, accidental damage, and the entrance of debris. Details of a conventional metal well guard are shown in Figure 9-2. A suitable alternative consists of a section of stainless steel wire wound screen as shown in Figure 9-3. In the case of a T-type well where the top of the riser pipe is more than 5 ft below ground, the well guard should be 42 in. in diameter to permit safe access by a ladder. A guard screen consisting of a wire mesh with 1 in.-square openings may be installed at the end of the outlet pipe to prevent animals and debris from entering the outlet pipe in the event the flap gates do not close properly.

9-4. Plastic Sleeves

Where relief wells are provided for underseepage control at levees, the well flows at relatively low river stages will be somewhat in excess of natural seepage. In cases where the additional seepage is considered objectionable, each well can be provided with a plastic sleeve, 1.0 or 1.5 ft in length, which will raise the discharge elevation of the well accordingly. The sleeves prevent well flow at low river stages when no pressure relief is necessary. At higher river stages or as soon as substratum pressures develop to the extent that water begins to spill over the top of the sleeves, they should be removed so that the well can function as intended.

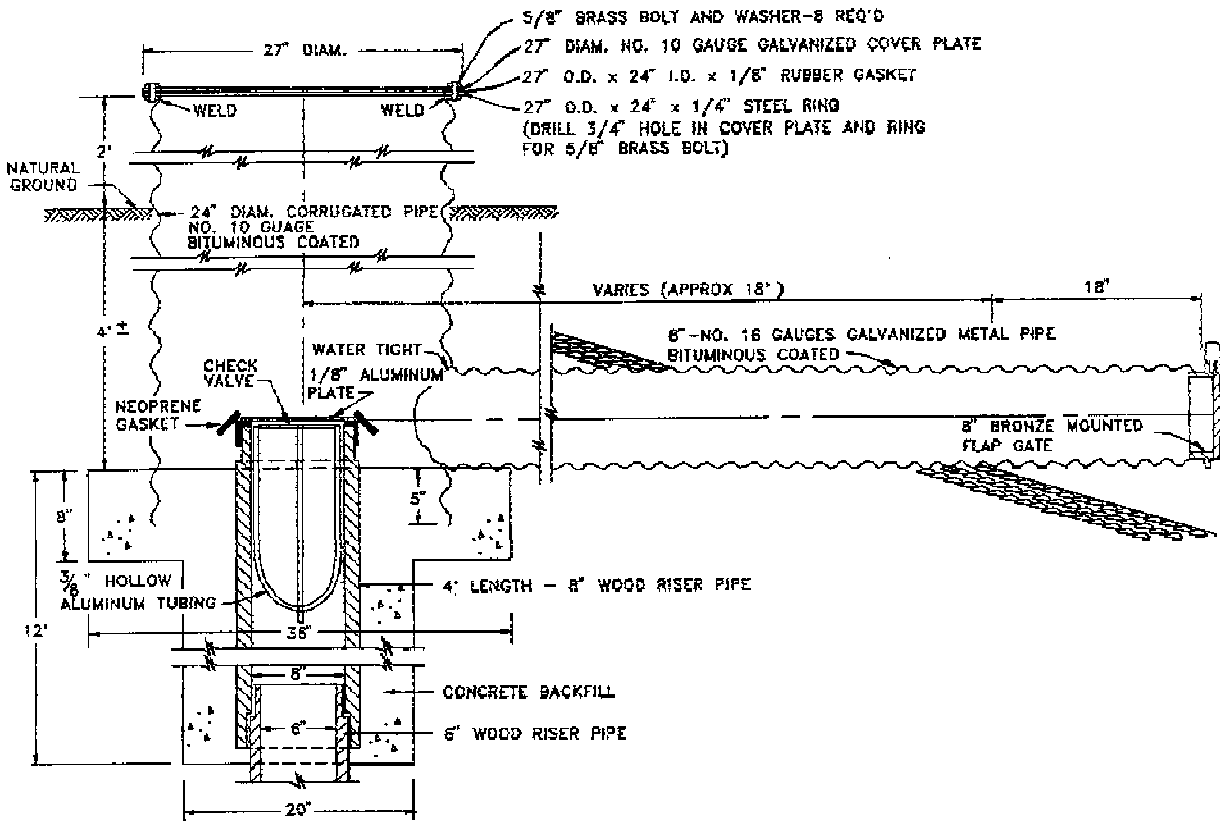


Figure 9-1. Typical detail of well top, check valve, and outlet

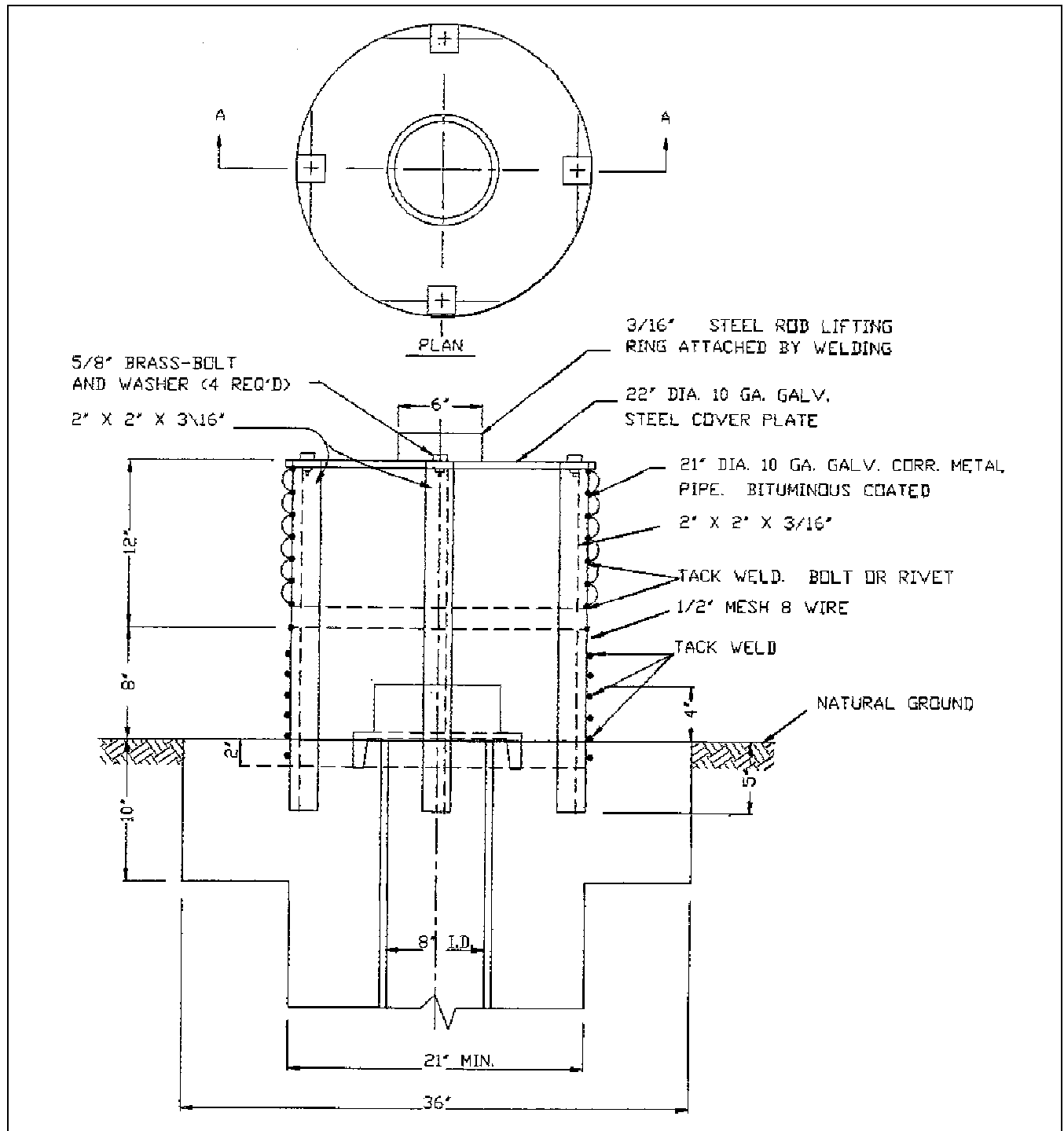


Figure 9-2. Metal well guard details

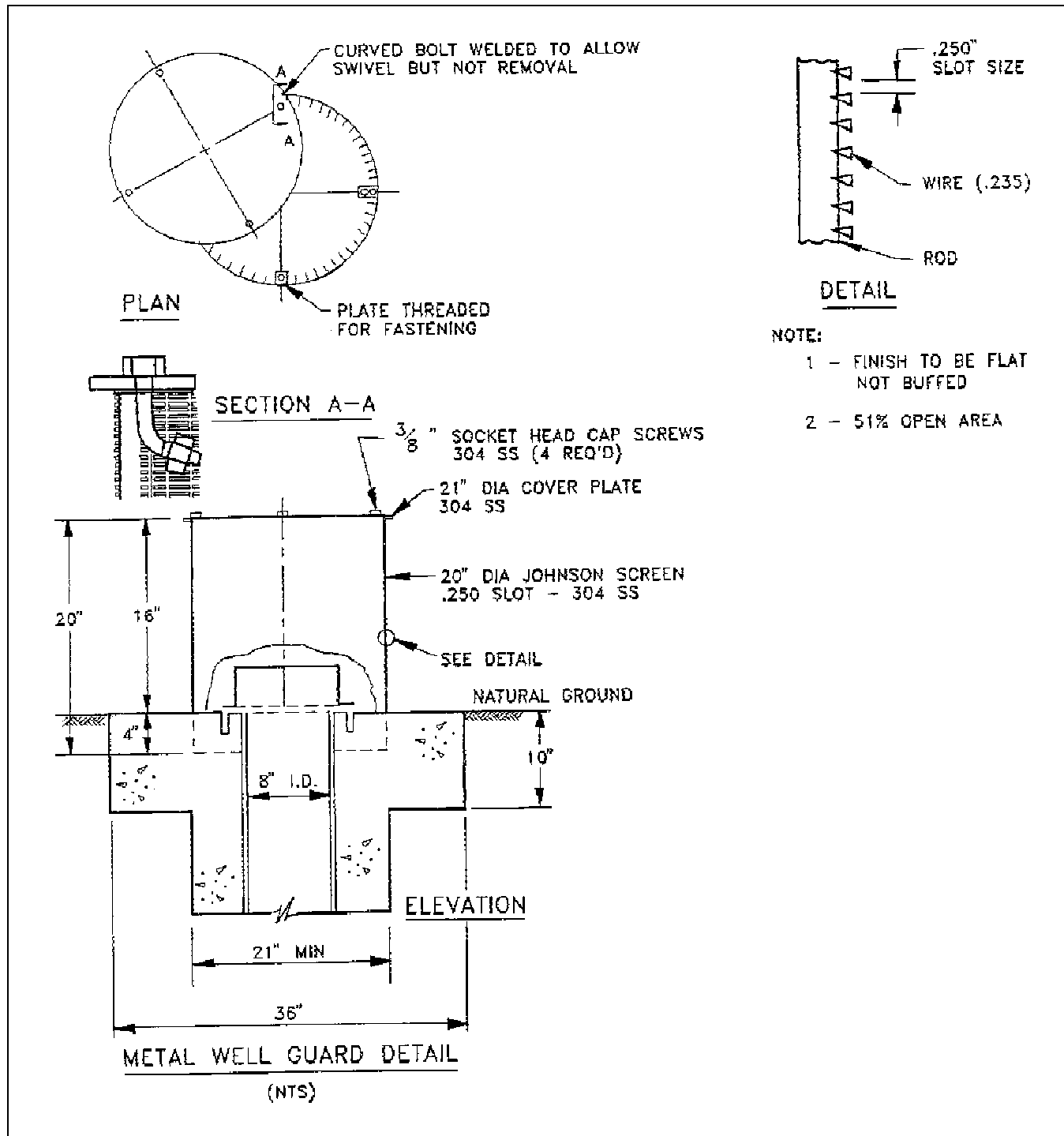


Figure 9-3. Alternative metal well guard